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ROOT CANAL INSTRUMENT SUCH AS A
ROOT-CANAL REAMER AND METHOD FOR MAKING SAME

5 The present invention relates to the field of the production of endodontic instruments for preparing dental canals and more particularly to the canal instruments of the dental reamer type which have a working cross section called the "blade" which 10 comprises three flutes forming three cutting lips.

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Canal instruments which have a working cross section which comprises three flutes forming three cutting lips are already known in the prior art.

15 In particular, this type of instrument is known from the prior art French patent applications 96 04987 and 96 14347.

20 The instruments described in the aforementioned patent applications have a circular symmetry of the order of three or more depending on the number of cutting lips of the instrument.

25 Thus, when the instrument is used in rotation in a curved dental canal, the instrument follows the axis of the canal by virtue of the equilibrium of the forces applied to the instrument.

30 This type of instrument is satisfactory except when the canal cannot be assimilated to a hole of circular cross section. The reason is that in this latter case the forces applied during the preparation of the canal are no longer equilibrated and the trajectory of the 35 instrument risks deviating from the axis of the dental canal. This deviation can have very serious consequences since it can lead to the formation of an incorrect path or even a perforation of the canal.

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The aim of the present invention is to remedy the disadvantages of the prior art by making available an instrument whose blade makes it possible to eliminate this risk. This aim is achieved by deliberately 5 breaking the circular symmetry of the instrument in such a way that, as the resistance of the blade to bending is no longer the same in all directions, the point of the instrument is made to seek out the dental canal and to penetrate into the latter naturally.

10 Thus, the canal instrument according to the invention has a working cross section which comprises three flutes forming three cutting lips, and it is characterized in that the three cutting lips are 15 situated at the vertices of a triangle, not an equilateral one, but an isosceles one.

20 The present invention also relates to different methods for production of the canal instrument according to the invention.

25 The invention will be better understood from the following description of an illustrative embodiment which is given as a nonlimiting example, reference being made to the attached figures, in which:

30 Figure 1 illustrates a cross sectional view of a canal instrument of the prior art, where the three cutting lips are situated at the vertices of an equilateral triangle;

35 Figure 2 illustrates a cross sectional view of a canal instrument according to the invention obtained by a first method of production;

Figure 3 illustrates a cross sectional view of a canal instrument according to the invention obtained by a second method of production; and

Figure 4 illustrates a cross sectional view of a canal instrument according to the invention obtained by a third method of production.

5 The canal instrument (1) according to the invention is a canal instrument of the dental reamer type having a working cross section (10) which comprises three flutes (20, 21, 22) forming three cutting lips (30, 31, 32). It is characterized in that the three cutting lips (30, 10 31, 32) are situated at the vertices of an isosceles triangle.

Like all canal instruments of this type, the instrument according to the invention has a working cross section 15 (10), also called the "blade", whose active part is obtained by cutting and has a conical shape also obtained by cutting. The conical shape is obtained in most cases by progressively moving the cutting wheel away from the axis of the instrument as one proceeds 20 away from the point of the instrument.

A canal instrument (0) of the prior art, obtained by machining three identical flutes (20, 21, 22) forming three cutting lips (30, 31, 32) arranged at 120° , is 25 illustrated in Figure 1.

The present invention also relates to different methods for production of the canal instrument according to the invention.

30 A first possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations at 120° , then in producing the 35 third flute (22) by performing a third machining operation at a greater depth than the first two, as is illustrated in Figure 2.

It is also possible to make the depth of the third

flute (22) such that it is greater than that of the first two flutes (20, 21) at the point of the working cross section (10) of the instrument and then becomes identical to the depth of the first two flutes (20, 21).

The depth of the third flute (22) can become identical to that of the first two flutes (20, 21) either at the end of the working cross section (10) or before the end of the working cross section (10).

A second possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations, at an angle greater than 120° , then in producing the third flute (22) by performing a third machining operation complementing the first two, as is illustrated in Figure 3.

A third possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations, at an angle less than 120° , then in producing the third flute (22) by performing a third machining operation complementing the first two, as is illustrated in Figure 4.